
New Combinations in *Manekia*, an Earlier Name for *Sarcorrhachis* (Piperaceae)

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ABSTRACT. *Manekia* Trelease is recognized as an earlier name for *Sarcorrhachis* Trelease (Piperaceae). After examination of available herbarium material, including appropriate type specimens, it is clear that *Manekia* and *Sarcorrhachis* are taxonomic synonyms. New combinations are made for four species of *Manekia* originally described in the genus *Sarcorrhachis*: *Manekia incurva* (Sieber ex Schultes) Arias, Callejas & Bornstein, *Manekia obtusa* (Miquel) Arias, Callejas & Bornstein, *Manekia sydowii* (Trelease) Arias, Callejas & Bornstein, and *Manekia venezuelana* (Steyermark) Arias, Callejas & Bornstein. The following names newly synonymize: *Sarcorrhachis obtusa* (Miquel) Trelease var. *cordata* Yuncker and *Sarcorrhachis sydowii* Trelease var. *hirsuta* Yuncker. Additionally, a lectotype is designated for *Manekia sydowii* (Trelease) Arias, Callejas & Bornstein.

RESUMEN. *Manekia* Trelease se reconoce como un nombre más antiguo para *Sarcorrhachis* Trelease (Piperaceae). Después de examinar material de herbario, incluyendo especímenes tipo apropiados, es evidente que *Manekia* y *Sarcorrhachis* son sinónimos taxonómicos. Se incluyen nuevas combinaciones para cuatro especies de *Manekia* originalmente descritas como *Sarcorrhachis*: *Manekia incurva* (Sieber ex Schultes) Arias, Callejas & Bornstein, *Manekia obtusa* (Miquel) Arias, Callejas & Bornstein, *Manekia sydowii* (Trelease) Arias, Callejas & Bornstein, *Manekia venezuelana* (Steyermark) Arias, Callejas & Bornstein. Los siguientes nombres se reconocen como sinónimos nuevos: *Sarcorrhachis obtusa* (Miquel) Trelease var. *cordata* Yuncker, *Sarcorrhachis sydowii* Trelease var. *Hirsuta* Yuncker. Adicionalmente, se designa un

lectotipo para *Manekia sydowii* (Trelease) Arias, Callejas & Bornstein.

Key words: *Manekia*, Neotropics, Piperaceae, *Sarcorrhachis*.

Sarcorrhachis Trelease is a widely recognized genus of perhaps five species ranging from southern Nicaragua to northern Peru and Brazil, with one species described from the Lesser Antilles (Jaramillo & Manos, 2001; Jaramillo et al., 2004; Mabberley, 1997). The genus was segregated from *Piper* on the basis of axillary (vs. leaf-opposed) inflorescences (Trelease, 1927), and a recent phylogenetic analysis based on DNA sequence data from three genes (*rbcL*, *atpB*, and 18S) confirms that it is a distinct taxon worthy of generic status (Jaramillo et al., 2004).

Bornstein (1996) recognized that the single species of *Manekia*, *M. urbani* Trelease, shares several key features with *Sarcorrhachis*, which collectively help to distinguish *Manekia* from the remaining taxa in Piperaceae. These features include a scandent habit; alternate, palmately veined leaves; petioles vaginate for their entire length, with adaxial, deciduous, marginal stipule scars that often project beyond the base of the blade; spikes usually axillary, occasionally terminal, either solitary or paired; and fruits laterally compressed and either immersed in or coalescent with the fleshy rachis.

According to the principle III of the *International Code of Botanical Nomenclature* (Greuter et al., 2000), *Manekia* has strict priority over *Sarcorrhachis*, having been published two months earlier. However, Bornstein (1996) proposed that *Sarcorrhachis* should be

conserved against *Manekia*, because it is the more established name in the botanical literature concerning the Piperaceae, and its conservation would minimize name changes resulting from the merger of two genera. The proposal was rejected, thereby maintaining priority for *Manekia* (Committee for Spermatophyta, 1998). As a result, any valid taxa within *Sarcorrhachis* must be transferred to *Manekia* with new combinations provided, which we accomplish here prior to a formal revision of this genus. Complete synonymy and typification are given for all accepted taxa.

Manekia Trelease, Repert. Spec. Nov. Regni Veg. 23: 313. [20 March] 1927. TYPE: *Manekia urbani* Trelease, E. L. Ekman 5242 (holotype, S not seen; isotype, ILL).

Sarcorrhachis Trelease, Contr. U.S. Natl. Herb. 26: 17. [21 May] 1927. TYPE: *Sarcorrhachis incurva* (Sieber ex Schultes) Trelease.

The genus name *Manekia* was originally described on the basis of a single species from Haiti. With the merger of *Sarcorrhachis* and *Manekia*, the range for the genus now includes Haiti, the Lesser Antilles (Guadeloupe, Dominica, Martinique, and St. Vincent), southern Nicaragua, Costa Rica, Panama, Colombia, Venezuela, Ecuador, northern Peru, and Brazil (Atlantic forest). The altitudinal distribution ranges from sea level to 2000 m, with species growing in different environments inside primary and secondary forest.

The original description of *Manekia* indicates that the flowers have two stamens and one carpel, an erroneous flower formula if compared with the flowers in *Sarcorrhachis* (four carpels and four stamens). According to Bornstein (1996), differences in stamen and stigma numbers in the original description of *Manekia* are due to the analysis of immature inflorescences. The generitype *Manekia urbani* is easily recognized on the basis of its small leaves (4–12 cm long and 3–12 cm wide) and short inflorescences (4–12 cm long). It is known only from Haiti in the vicinity of the type locality, with the most recent collections in 1983. With the extensive loss of forested habitat in Haiti, it is possible that the species is now extinct. Attempts should be made to locate populations there and possibly in the Dominican Republic.

1. *Manekia incurva* (Sieber ex Schultes) Arias, Callejas & Bornstein, comb. nov. Basionym: *Piper incurvum* Sieber ex Schultes, Mant. 1 (Schultes): 238. 1822. *Sarcorrhachis incurva* (Sieber ex Schultes) Trelease, Contr. U.S. Natl. Herb. 26: 17. 1927. TYPE: Martinique, F. W. Sieber 254 (holotype, B destroyed; lectotype,

designated by Jones (1985: 99), ILL; isotypes, GH, MO, US, photo ex US at A).

Piper guadeloupense C. DC. is possibly a heterotypic synonym for *Manekia incurva*, but type specimens were not directly examined. Two photos of one of the syntypes that is at GH were found at A and US. The name *Sarcorrhachis incurva* (Sieber ex Schultes) Trelease var. *stehlei* Trelease ex Stehlé, Bull. Soc. Bot. France 83: 627. 1936 is found as nomen nudum for *Manekia incurva* after examination of the original reference. More research needs to be done for the names *Sarcorrhachis incurva* (Sieber ex Schultes) Trelease var. *typica* Trelease ex Stehlé and *Sarcorrhachis incurva* (Sieber ex Schultes) Trel. var. *treleasii* Stehlé. These two names are cited in several secondary references as varieties of *Manekia incurva*, but original descriptions were not consulted. As a consequence, it is not possible to prove if the names were valid or not.

N.B. The type collections by L. C. Richard, presumably from French Guiana, are more likely from the Lesser Antilles as part of his travels from 1785 to 1789, where he is known to have collected on Guadeloupe and Martinique (Bornstein, unpublished).

Manekia incurva is also quite similar to *Manekia naranjoana* (C. DC.) Callejas, including identical features of leaf morphology (shape, venation, texture, color, among others), and the number and shape of several floral parts. We are currently analyzing all available specimens to determine whether these two species should be merged, with *Manekia incurva* having priority.

Manekia sydowii and *Manekia venezuelana* (these new combinations presented herein), together with *Manekia incurva* and *Manekia naranjoana*, constitute a difficult species complex. These four taxa share floral similarities, which include the number of stamens and stigmatic lobes, as well as size and shape of flowers, fruits, bracts, anthers, and pistils. On the other hand, some vegetative characters such as leaf size, shape, texture, and indument are quite variable over the geographic and altitudinal range of these species. Until a more thorough study, including molecular analysis, is complete, we provide only new combinations for these taxa. It is quite possible that further analysis will result in the recognition of fewer species than indicated here.

2. *Manekia obtusa* (Miquel) Arias, Callejas & Bornstein, comb. nov. Basionym: *Artanthe obtusa* Miquel, Syst. Piperac. 416. 1844. *Sarcorrhachis obtusa* (Miquel) Trelease, Contr. U.S. Natl. Herb. 26: 118. 1929. TYPE: Brazil, F. Sellow s.n. (holotype, B not seen).

Sarcorhachis obtusa (Miquel) Trelease var. *cordata* Yuncker, Bol. Inst. Bot. (São Paulo) 3: 134, fig. 117. 1966. Syn. nov. TYPE: Brazil, Paraná, Jacarei, 14 Aug. 1914, *I. G. Jönsson 862a* (holotype, S, fragments at ILL; isotypes, LE, US not seen).

Piper convallariodorum C. DC., Bull. Herb. Boissier, ser. 2, 1(4): 356. 1901. *Sarcorhachis convallariodorum* (C. DC.) Steyermark, Pittieria 3: 32. 1971. TYPE: Brazil, Serra Ouro Preto, "in locis umbrosis ad rivulos," 1050 m, *C. A. W. Schwacke 10227* (holotype, G-DEL; photo ex G-DEL at GH, US).

This species is clearly distinct from the other species of *Manekia* on the basis of the size of the anthers (0.5–1.5 mm wide) and leaf apex rounded or obtuse (vs. acute or acuminate in the rest of species). In addition, the lack of stipular scar that projects beyond the petiole onto the base of the blade is useful in recognizing this species. With rare exceptions, the other species of *Manekia* have a scar formed by the stipular sheath that occurs along the entire length of the petiole and extends onto the blade for a centimeter or more.

3. *Manekia sydowii* (Trelease) Arias, Callejas & Bornstein, comb. nov. Basionym: *Sarcorhachis sydowii* Trelease, Repert. Spec. Nov. Regni Veg. 48: 16. 1940. TYPE: Ecuador, Prov. Pichincha: prope Mindo, 1000–2000 m, *H. Sydow 317* (lectotype, designated here, US 1743685; isotype, US 1743684).

Sarcorhachis sydowii Trelease var. *hirsuta* Yuncker, Ann. Missouri Bot. Gard. 53: 380. 1966. Syn. nov. TYPE: Ecuador, Zamora; road from Loja to Zamora, km 45–51, 1400–1600 m, *C. H. Dodson & L. B. Thien 1423* (holotype, MO; isotype, NY).

The type specimen for *Manekia sydowii* was at US. Two separate sheets were found without a designation of holotype and/or isotype. Therefore, the most complete and well preserved herbarium specimen was selected as a lectotype for *Manekia sydowii*. This species has the greatest amount of morphological variation within the genus, especially in leaf shape (ovate to elliptic or rounded), pubescence of the leaves and stems (glabrous to highly pubescent), and leaf texture (membranous to coriaceous). This may be due to its wide range in habitats from low-elevation to montane humid forest. This species constitutes a difficult complex that requires a more thorough systematic evaluation.

4. *Manekia venezuelana* (Steyermark) Arias, Callejas & Bornstein, comb. nov. Basionym: *Sarcorhachis venezuelana* Steyermark, Pittieria 3: 33. 1971. TYPE: Venezuela, Carabobo: "selva siempre verde a lo largo del Río San Gíán, al sur de Borburata, arriba de la Planta Eléctrica, entre Los Tanques y la Toma," 750 m, *J. A. Steyermark & C. S. Steyermark 95152* (holotype, VEN; isotypes, S, US).

This species is very similar to *Manekia sydowii* in several characters like leaf shape and size. Steyermark recognized this species on the basis of the number stigmatic lobes (five), the glabrate ridge of the rachis, and the occurrence of two spikes in the leaf axil. However, after review of types and other supplementary material, it is apparent that these features are the same for both species. Vegetative features are also similar between the two species, and therefore they may be combined in our revision, with *Manekia sydowii* having priority.

A sixth species of *Sarcorhachis*, *Sarcorhachis schwackei*, was described by Yuncker (1966) on the basis of a collection from Brazil (*Schwacke II, 18* at NY). It is not actually a species of *Sarcorhachis*, since it does not have axillary inflorescences and the leaf venation is clearly pinnate (vs. palmate). The flowers and fruits are also different from other species of *Sarcorhachis* (e.g., not immersed in the rachis).

Acknowledgments. We are most grateful to the directors and curators of A, F, G, GH, ILL, MO, NY, R, S, SP, US, and VEN for loans of the cited material. A grant from the Missouri Botanical Garden, Bascom Fellowship, supported the research program of the first author.

Literature Cited

- Bornstein, A. 1996. Proposal to conserve the name *Sarcorhachis* against *Manekia* (Piperaceae). *Taxon* 45: 323–324.
- Committee for Spermatophyta. 1998. (1223) Conserve *Sarcorhachis* Trel. against *Manekia* Trel. (Piperaceae). *Taxon* 47: 870.
- Greuter, W., J. McNeill, F. R. Barrie, H. M. Burdet, V. Demoulin, T. S. Filgueiras, D. H. Nicolson, P. C. Silva, J. E. Skog, P. Trehane, N. J. Turland & D. L. Hawksworth (editors). 2000. International Code of Botanical Nomenclature (Saint Louis Code). *Regnum Veg.* 138.
- Jaramillo, M. A. & P. S. Manos. 2001. Phylogeny and patterns of floral diversity in the genus *Piper* (Piperaceae). *Amer. J. Bot.* 88: 706–716.
- , P. S. Manos & E. A. Zimmer. 2004. Phylogenetic relationships of the perianthless Piperales: Reconstructing the evolution of floral development. *Int. J. Pl. Sci.* 165: 403–416.

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- Jones, A. G. 1985. An annotated catalogue of type specimens in the University of Illinois Herbarium (III.)—1. Piperaceae, except *Peperomia*. *Phytologia* 58: 1–102.
- Lee, D. W. & J. H. Richards. 1991. Heteroblastic development in vines. Pp. 197–285 in F. E. Putz & H. A. Mooney (editors), *The Biology of Vines*. Cambridge Univ. Press, Cambridge.
- Mabberley, D. J. 1997. *The Plant-Book, a Portable Dictionary of the Vascular Plants*, 2nd ed. Cambridge Univ. Press, Cambridge.
- Trellease, W. 1927. The Piperaceae of Panama. *Contr. U.S. Natl. Herb.* 26: 15–50.
- Yuncker, T. G. 1966. New Species of Piperaceae from Brazil. *Bol. Inst. Bot. (São Paulo)* 3: 133–134.